

PROJECT

AUTOPORT

Funding: National (Spain)

Duration: Mar 2013 - Oct 2015

Status: Complete with results



Background & policy context:

The background of the project is to develop the technologies needed for a fully automated stowage on roll-on/roll-off ships in order to improve the logistic flow, reduce stowage times and maximize the efficiency of the space occupation in hold. This is accomplished by both the automation of logistic processes and terminal trucks. Automation of processes aims for obtaining a stowage plan which reduces to the minimum the obstructions between cargo and trucks in the process and also the imbalance of the hold, in order to allow easy and smooth load operations even in rough sea conditions. Automation of terminal trucks consist in the efficient use of localization, path planning and control for taking a specifically designated roll trailer and stowing it on the exact hold location pointed by the stowage plan, all without human intervention.

Objectives:

Main objectives:

- The development of a novel Port Operation Management System (POMS) and tools combining functionalities of Transport and Inventory Management for enterprise communities operating in ports and intermodal freight terminals. Such tools will incorporate real-time operational logistics planning among others.
- The development of a new easy to use and affordable tool for RoRo enterprise communities based on a semantic approach to improve connectivity in order to facilitate the communication between different systems from different companies providing complimentary services and/or information regarding the logistic process.
- The development of Automatic stowage and lashing through novel Automatic Guided Vehicles (AGV) based on terminal tractors for Ro-Ro (Roll-on Roll-off) transshipment tailored to the specific needs.
- The improvement of infrastructures for ports and the related freight terminals through the innovative communications and positioning technologies oriented to support and manage the previously mentioned Automatic Guided Vehicles.
- The development of a new logistic concept and ICT-based control centre to be applied by shippers, based on the integration of the AGVs into the POMS for real time planning optimization. The AGVs will be linked to the information flow incurred by logistic operation and thus to the whole supply chain.
- The generation of a new ecosystem of integrated tools to increase the visibility and transparency of information for stakeholders in the RoRo transport value chain due to mobile connectivity and real-time localisation, identification, and tracking of goods and resources, and also based on the availability of all the previous elements.

Other funding sources: Spanish Ministry of Economy and Competitiveness through the Centre for Industrial Technological Development (CDTI)

Partners:

- Tecnalía Research & Innovation (Lead Partner)
- Imatia
- University of Vigo
- Galman

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Key Results:

The result showed a successful development of a solution in order to increase the efficiency and decrease the pollution produced by the use of the required vehicles to move cargo along the ports. This solution is able to move autonomously the Tugmaster and the rolltrailer together inside the ship, avoiding the risks and inefficiencies produced when one person is the main driver of the vehicle.

Multiple different topics were addressed during the development of the AUTOPORT project: vision systems, vehicle sensors, vehicle automation, vehicle autonomous control and intelligent management.

The AUTOPORT project allowed to understand how the autonomous systems can be introduced in work areas, regardless of the typical approach focused on the city cars. This is only the beginning of the new cargo transportation system, and opens the door to the creation of new scenarios where the autonomous vehicles can be useful for both cargo and passengers transportation.

Documents:

 [Paper about AUTOPORT project \(english language\)](#)

STRIA Roadmaps:

Cooperative, connected and automated transport, Network and traffic management systems

Transport mode: Multimodal transport

Transport sectors: Freight transport

Transport policies: Environmental/Emissions aspects